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COMPARISON OF IN VIVO LONGITUDINAL STRENGTH AND CONFORMABILITY FOLLOWING STENT IMPLANTATION IN RABBIT ILIAC ARTERY

Poster Contributions
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Background: Recently, longitudinal coronary stent deformation has been highlighted and some bench tests have demonstrated difference in longitudinal strength among the stent platforms, however, this has not been investigated in an in vivo setting. This is of interest because there may be a trade-off between high longitudinal strength and high conformability. The aim of the current study was to determine the in vivo longitudinal strength and conformability of the various stent platforms following stent implantation in rabbit iliac arteries.

Methods: We evaluated 4 types of commercially available stents; MultiLink8 (Abbott Vascular), Omega (Boston Scientific), Integrity (Medtronic) and Nobori (Terumo Corporation). To investigate the longitudinal strength, constant axial force was applied to the stent edge by a guiding catheter after deployment in the rabbit iliac artery and the compression rate was calculated by measuring stent length. In order to evaluate conformability, stents were deployed crossing over the iliac bifurcation and the bifurcation angles were measured before and after the stent implantation. If the change in the angle was small, the stent was considered to be more conformable.

Results: The Omega demonstrated significantly greater longitudinal compression compared with other stents (Omega 17.4±9.3%, MultiLink8 2.8±2.3%, Integrity 2.8±1.4%, and Nobori 3.8±3.2%, p=0.0036), but Omega showed the greatest conformability evidenced by the least change in the bifurcation angle (Omega 12.7±0.8%, 8 25.7±2.4%, Integrity 28.3±1.1%, and Nobori 28.1±6.8%, p=0.0347).

Conclusions: In this rabbit model, the Omega stent of Element platform, showed the least longitudinal strength but the greatest conformability compared with the other stent platforms.